Georgia Department of Transportation
Quality Control and Quality Assurance Program

Revised: January 1, 2010

The following Quality Control and Quality Assurance (QC/QA) Program has been developed by the Engineering Division of the Georgia Department of Transportation to ensure the engineering, design, plans and cost estimates developed by our design offices are supported by comprehensive studies and sound engineering judgment, comply with established policies, guidelines and standards, and contain appropriate design flexibility and cost saving measures.

The engineering managers within our design offices are responsible for reviewing and certifying the accuracy of the engineering and plans prepared by their staff. The QC/QA practices defined within this program focus on the roadway design office environment and may not reflect all business practices across the Department. This program may be modified to fit specific business practices and experience/skill levels within an office, design group, or design squad. This QC/QA Program is maintained by the State Design Policy Engineer who will routinely consult with Office Administrators to identify and document unique methods and practices that consistently result in higher quality work. These "Best Quality Control Practices" will be uniformly applied across the Department so that we are constantly improving our quality and efficiency in delivering projects.

In support of this QC/QA Program, the engineers within our design offices are committed to the application of established design policies, guidelines, and processes developed and published by the Georgia Department of Transportation (GDOT), the American Association of State Highway and Transportation Officials (AASHTO), the Federal Highway Administration (FHWA), the National Highway Institute (NHI), the Transportation Research Board (TRB), and the National Cooperative Highway Research Program (NCHRP). In addition, our design offices are committed to recruiting qualified engineers and supporting the professional development of those engineers including providing fundamental training in the engineering disciplines of: Highway Capacity and Traffic Studies, Geometric Design of Roadways, Highway Hydraulics and Hydrology, and Pavement Design.

This QC/QA program also considers the coordination effort required between the Design Group Manager/Senior Design Engineer and the project team during the development of the plans and cost estimates. This QC/QA program is in addition to any current QC/QA procedures and publications that are in use by the Department such as, but not limited to, the Plan Development Process (PDP), Plan Presentation Guide (PPG), Electronic Data Guidelines (EDG), the Field Plan Review process (PFPR/FFPR), and the "Checklist for R/W Plans" and the "Designer's Checklist for Plans Submittal to Contracts Administration".

Purpose: The purpose of this QC/QA Program is to:

Define the QC/QA responsibilities of the Office Administrator, Assistant Office Administrator, Design Group Manager/Senior Design Engineer, and Lead Design Engineer.
Define the components of QC and QA required to develop roadway design projects;
Define the frequency of practicing QC activities and QA reviews;
Define the methods of documenting QC/QA activities/reviews and individual accountability;
Prevent errors from being introduced to the engineering, design, plans and cost estimates;
Ensure decisions are supported by comprehensive studies and sound engineering judgment; and
Identify individuals and their unique methods that reflect Best Quality Control Practices and apply those methods uniformly across the Design Groups/Squads.

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Responsibilities:

	Office Administrator/Office Head	
	Senior Design Engineer Lead Design Engineer	**Assistant Office Admin/Assistant Office Head (AOH)**
Office of Roadway Design	**Quality Control**	**Quality Assurance**
State Roadway Design Engineer	Implementation/Compliance/Best Practices	Implementation/Compliance/Best Practices
Assistant State Roadway Design Engineer		QA Review and certification for advancing design
Design Group Manager	Practice & Certify QC. Maintain QC/QA Record	
Lead Design Engineer	Practice & Certify QC. Maintain QC/QA Record	
District Design Office	**Quality Control**	**Quality Assurance**
District Design Engineer	Implementation/Compliance/Best Practices	Implementation/Compliance/Best Practices
District Design Squad Leader	Practice & Certify QC. Maintain QC/QA Record	QA Review and certification for advancing design
Design Engineer	Practice & Certify QC. Maintain QC/QA Record	
Traffic Operations	**Quality Control**	**Quality Assurance**
State Traffic Engineer	Implementation/Compliance/Best Practices	Implementation/Compliance/Best Practices
Assistant State Traffic Engineer		QA Review and certification for advancing design
Traffic Design Manager	Practice & Certify QC. Maintain QC/QA Record	
Traffic Design Supervisor	Practice & Certify QC. Maintain QC/QA Record	

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Quality Control (QC): Refers to the daily processes, practices, and checks in place to control the quality of the engineering, design, plans and cost estimates as they are being developed. QC is the responsibility of the DGM/Senior Engineer and the Lead Design Engineer. QC primarily involves providing constant training and supervision to subordinate design engineers, providing clear decisions and directions, and the immediate review and documentation of design calculations and studies for accuracy, completeness, and attention to detail.

The Department's formal Plan Development Process (PDP) establishes the general sequence of activities and events required to control the quality of a road design project throughout its development. It is the responsibility of the DGM/Senior Engineer and the Lead Design Engineer to ensure that design activities and decisions are being accomplished at the appropriate time in the process and according to acceptable industry standards. This includes the accurate practice of transportation engineering and design, use and interpretation of design policy and guidelines, and use of civil software and CADD applications required to analyze and prepare the conceptual, right-of-way, and construction plans.

Components of Quality Control:

1. Develop and maintain clean and organized Project Correspondence Files for documenting decisions and supporting project data. At a minimum, the project correspondence file structure and plan record should include the following information.

   - Project Programming Document, Project Justification/Need & Purpose
   - QC/QA Record
   - Project Concept Report
   - Concept Layout
   - Project Cost Estimates (Man-Hour-Estimate, B/C, PE, ROW, UTL, CST)
   - Value Engineering Report, Responses, and Implementation
   - Notice of Location & Design (L&D)
   - Environmental Document
   - Field Survey Control Package
   - Public Hearing Display(s) and Comments/Responses
   - Internal Letters of Transmittal
   - External Letters of Transmittal
   - Project Email Communications and Telephone Messages
   - Project Design Data Book
   - Highway Capacity Analysis and Traffic Studies
   - Highway Hydraulics/Hydrology Studies and Drainage Design Calculations
   - Soil Survey/Pavement Evaluation Report/BFI/WFI
   - Approved Pavement Design
   - Intersection Sight Distance Studies
   - Design Exceptions & Variances
   - Field Plan Review Report (PFPR/FFPR) and Responses
   - Complete ½ size sets of "Right-of-Way Plans" and "Construction Plans".
   - Consultant Contract(s) and correspondence

Project: _____. AOH: _____. Date: _____.

Components of Quality Control (continued):

2. Develop and maintain a Project Design Data Book. http://mygdot.dot.ga.gov/info/pap/Forms/4050-1.pdf.
3. Conduct meetings with the Project Manager (PM), design engineers, and project team members to review scope items, discuss and resolve design related issues, assign deadlines, and monitor progress. Project team members include: Planning, OFM, Environmental Services, Location Bureau, District Field Surveys, Geotechnical Bureau, Bridge Design, Utilities, Traffic Operations, Right-Of-Way, and Construction. Develop "Action Plans" with the PM to resolve design related issues with project team members. Action Plans are emailed to the appropriate Project Team Members. The Action Plan should:
    a. Provide a brief history of the issue.
    b. Clearly define the required action item(s).
    c. Identify the individual(s) responsible for delivering the action item.
    d. State the date when the action item is due.
    e. Follow-up, close-out action items, update, and notify Project Team Members.
4. "QA Review of State Waters and Stream Buffer Delineations". Upon receiving Database Mapping, the designer shall plot roll-plots of the project alignment with all topo drainage features displayed. The designer shall mark all USGS blue-line streams on the roll-plots with blue highlighter, all existing topo drainage features with yellow highlighter, and all streams and buffers previously identified by the ecologist with blue and orange highlighters respectively. The roll-plots shall be submitted to the Office of Environmental Services for QA review with cover letter (**Appendix B**) attached.
5. "Constructability Review". During preliminary design, the DGM/Senior Design Engineer is responsible for holding a Constructability Review with the District Construction Engineer (See **Appendix C** for cover letter). The meeting should be scheduled once the horizontal and vertical geometry has been established, the initial cross sections are available, and SUE survey data has been received (for SUE projects). The purpose of the meeting is to identify and resolve issues with staging and constructability before the geometric design of the project is completed and Right-Of-Way Plans are developed (see PDP, Chapter 6; Constructability Review in Preliminary Design). http://mygdot.dot.ga.gov/info/pap/Forms/4050-1.pdf
6. Provide constant formal training (Practical Design Training) to subordinate design engineers in the following engineering disciplines:
    a. Highway Capacity Analysis and Traffic Studies
    b. Geometric Design of Roadways
    c. Highway Hydraulics and Hydrology
    d. Pavement Design

    Training will involve discussion of the fundamental engineering principles, the current applicable design policy and guidelines, and hands-on practice of the required calculations and the use of the design software.
7. Application of established Design Policies and Guidelines. The GDOT Design Policy Manual is the primary resource for design policies and guidelines required by the Georgia Department of Transportation. A complete listing of all design publications can be found within the online version of the GDOT Design Policy Manual at the following link: http://www.dot.ga.gov/doingbusiness/PoliciesManuals/roads/designpolicies/Pages/DesignPolicyManual.aspx

Components of Quality Control (continued):

8. Application of Design Software (see R.O.A.D.S. webpage for downloads)
   - Highway Capacity and Traffic Studies
     - HCS+ (Highway Capacity Software by McTrans) – implements the 2000 HCM.
     - SYNCHRO – Traffic Simulation Modeling – optimizing traffic signal timing.
     - CORSIM – Traffic Simulation Modeling – combined signal and freeway systems.
   - Geometric Design of Roadways
     - MicroStation J (Bentley) – Computer Aided Drafting & Design (CADD)
     - CAiCE/Autodesk (current), INROADS/Bentley (future) – Civil Design Software.
     - AUTOTURN – Automated Vehicle Turning Specifications and Geometry
   - Highway Hydraulics and Hydrology / Drainage Design / Erosion Control
     - Storm CAD (Haestad) – Longitudinal drainage system design.
     - Flow Master (Haestad) – Hydraulic calculator for gutter spread, spacing inlets, sizing pipes, and open channel flow.
     - Culvert Master (Haestad) – Culvert Design
     - HY8 (FHWA) – Culvert Design
     - HEC-RAS (COE) – Stream Modeling Software, primarily for bridge culverts that require FEMA coordination.
     - Pond Pac (Haestad) – Design of Detention Ponds and Water Quality Ponds.
     - Sediment Basin Program (GDOT) – Design of sediment basin and spillway.
     - Ditch Protection (HEC 15) – evaluate channel lining protection options.
   - Pavement Design
     - WIN_APD (Version B.12.01.01) – Asphalt Pavement Design.
   - Miscellaneous
     - Deed Writer Program (GDOT) – generate parcel deed defined from the Civil Software right-of-way and easement chains.
     - Detail Estimate Program (GDOT) – designer's final construction cost estimate.

9. Application of Electronic Data Guidelines and Plan Presentation Guidelines. The EDG and PPG are managed by committee chaired by the Design Services Manager in the Office of Design Policy and Support. The EDG and PPG can be found on the R.O.A.D.S webpage at the link below. http://www.dot.ga.gov/doingbusiness/PoliciesManuals/roads/Pages/Committee.aspx

10. Immediate review and approval of completed design calculations and studies developed by subordinate design engineers; for accuracy, completeness, and attention to detail. See **Appendix D** for method of documentation. Design calculations include but are not limited to:
    - Geometric Design Elements (horizontal/vertical curves, superelevation, etc…)
    - Capacity Analysis (number of turn lanes, length of turn lanes, etc…)
    - Intersection Design (alignment, radii, islands, pedestrian access, etc…)
    - Intersection Sight Distance Study (design veh., height of eye/object, graphical analysis)
    - Culvert Design (existing conditions, allowable HW, energy dissipation, etc…)
    - Open Channel/Ditch Design (width and depth of ditch, type of protection, etc…)
    - Longitudinal Drainage Design (gutter spread, structure spacing, pipe sizing, etc…)
    - Sedimentation Basin Design (warrants, sediment storage calc, primary spillway, etc…)
    - Pavement Design (verify traffic volumes, truck percentages, soil support data, etc…)

Project: _____. AOH: _____. Date: _____.

Quality Assurance (QA): Refers to the formal high-level review of the project plans and cost estimates by an experienced engineering manager at strategic points in the plan development process, to ensure and certify that the plans and cost estimates meet established quality standards and provide for appropriate flexibility and cost savings. Essentially, quality assurance is the process of enforcing quality control standards at strategic points in project development. Quality Assurance is the responsibility of the Assistant Office Head level.

A series of QA Reviews are conducted by the Assistant Office Head during project development with the support of the DGM/Senior Design Engineer, consultant (if applicable), the Lead Design Engineer, and appropriate members of the Project Team. At a minimum, a QA Review is required at the following milestones/strategic points in the plan development process.

1. Initial Programmed Cost Estimates (PE, ROW, UTL, CST)
2. Concept Review
3. Geometric Review
4. Preliminary Plans Review (**QA Stamp required on plans**) (defined on following page)
5. Right-Of-Way Plans Review
6. FFPR Plans Review (**QA Stamp required on plans**) (defined on following page)
7. Final Plans Submission Review.

It is the responsibility of the Assistant Office Head to schedule the QA Review meetings with the Office Head, DGM/Senior Design Engineer, and Lead Design Engineer. The Senior Design Engineer shall provide the Assistant Office Head with the "QC/QA Record" (defined below) and the plans prior to the review meeting. The capacity analysis, sight distance studies, drainage calculation/studies, and summary of quantities, should also be provided at the review meeting if applicable. The Assistant Office Head should not allow a project design to advance to the next stage until they are satisfied that QC has occurred and the "QC/QA Record" is in order as defined by this Program.

QC/QA Documentation and Accountability:
For each project, a hardcopy record of QC activities and QA Reviews shall be maintained in one location by the DGM/Senior Design Engineer and Lead Design Engineer. A folder named, "QC/QA Record" shall be placed in the front-end of the Project Correspondence Files for each project. See **Appendix A** of this program for form titled "QC/QA Record". All QC and QA activities shall be recorded on this form throughout project development. This form is not meant to contain detailed comments about design issues, but to document that QC and QA checks/reviews/events have occurred for critical design activities and to ensure individual accountability throughout project development. This includes, but is not limited to recording activities such as:

- QC - Periodic review of the Project Design Data Book for completeness and accuracy.
- QC - When subordinate design engineers attend training.
- QC - Review of design calculations and studies conducted by subordinate design engineers (refer to Components of QC and **Appendix D** of this program for documentation and accountability).
- QC - Review of all software output results developed by subordinate design engineers.
- QA - When QA requests are sent to Project Team Members for action.
- QA - Formal QA Reviews (1-7) of reports, plans, and cost estimates, conducted by the Assistant Office Head.

QC/QA Documentation and Accountability (continued):

The Assistant Office Head shall complete the QA Review (1-7) checklist(s) and sign and date the report at the bottom of the page and file in the project "QC/QA Record" folder.

The "QC/QA Record" folder shall also contain major recommendations resulting from the formal QA Reviews (1-7) conducted by the Assistant Office Head.

When requesting PFPR and FFPR, the letter addressed to Engineering Services and signed by the Office Head shall also include the respective QA Review checklist signed and dated by the Assistant Office Head. The Office Head should not allow a project to advance to PFPR or FFPR without the respective QA Review checklist signed and dated for accountability.

Plans undergoing a QA Review for "Preliminary Plans Review" and "FFPR Plans Review" shall be stamped, signed, and dated by the Assistant Office Head, DGM/Senior Design Engineer, Lead Design Engineer, and Designer according to the directions below:

QA Stamp: For Accountability, during the QA Review for "Preliminary Plans Review" and "FFPR Plans Review", each sheet within the plan-set shall be stamped with the red stamp below and signed and dated by the individual(s) responsible for the QA Review, back-checking to verify the issue is valid, correcting the plans, and verifying that the plans have been corrected appropriately. These record sets of plans should be retained until after the project has been constructed and "Final Acceptance" has been received.

Assistant Office Head → **Checked…… Date……...**
DGM/Sen. Des. Engr. or Lead Des. Engr. → **Back-checked……...…Date……...**
Design Engineer → **Corrected……..Date……**
DGM/Sen. Des. Engr. or Lead Des. Engr. → **Verified……Date……**

QA REVIEW

- Local/Consultant Projects: At the discretion of the Office Head, projects developed by consultant engineering firms for local governments may be processed through these seven QA Review events. The Assistant Office Head will not stamp or certify the quality of plans developed by a consultant, but will make comments or request additional information required to support decisions or judgments. Under no circumstance does a QA Review by GDOT release the consultant from their contractual responsibilities involving QC/QA or from professional liability involving the engineering, plans, and cost estimates, or from recovery of damages during construction that result from errors and omissions in the plans.

Best Quality Control Practices:

In order to constantly look for ways to improve the quality of the engineering, design, plans and cost estimates, the State Design Policy Engineer will consult with the Office Head and Assistant Office Heads (at a minimum bi-annually) to identify individuals and methods that reflect Best Quality Control Practices. Performance Measures (P&P 2440-2) documented by Engineering Services at Concept Review, PFPR, and FFPR may be used to supplement this assessment. Those individuals with outstanding quality records will be consulted to identify their unique training, methods, and practices. Those QC methods and practices will be documented by the State Design Policy Engineer and uniformly applied across the Design Groups/Squads by the Office Administrators on a continuous basis.

Project: _____. AOH: _____. Date: _____.

Component of Quality Assurance:

1. Initial Programmed Cost Estimates (PE, ROW, UTL, CST)

Review Panel: Office Head, Assistant Office Head, DGM/Senior Des. Engineer, Lead Engineer

Review Schedule: Hold meeting within one month of receiving project assignment from the Program Control Administrator, Director of Engineering, or Chief Engineer.

Immediately after a project is assigned to the Design Office, all initial cost estimates related to the project shall be assessed for consistency with the Project Justification, Logical Termini, and proposed scope provided by the Office of Planning or Office of Program Delivery. This includes costs associated with Preliminary Engineering, potential reimbursable Utility Relocations, required Right-Of-Way, Construction, and Benefit/Cost Analysis if applicable. Initial cost estimates shall be reviewed for consistency with proposed scope of work and complexity of project, constructability, current price trends for construction items, and current regional property values.

Action:

DGM/Senior Design Engineer will coordinate with PM and appropriate offices to update programmed cost estimate(s) if needed; and/or conduct additional studies to resolve questions, and follow up with the Assistant Office Head for closure.

DGM/Senior Design Engineer will coordinate with the PM to submit "Revisions to Programmed Costs" to Engineering Services and OFM; standard cover letter is located on the R.O.A.D.S. webpage.
http://www.dot.ga.gov/doingbusiness/policiesmanuals/roads/pages/default.aspx

Document and file, in QC/QA folder, a copy of the review notes and any actions taken by the review panel.

Project: _____. AOH: _____. Date: _____.

Component of Quality Assurance:

2. Concept Review

Review Panel: Assistant Office Head, DGM/Senior Design Engineer, Lead Design Engineer

Review Schedule: Hold meeting Four (4) weeks prior to distributing the original concept report. At a minimum, the Concept Layout and Draft Concept Report or Revised Concept Report will be evaluated for compliance and consistency with the following elements:

Project addresses the Need & Purpose and is consistent with Logical Termini.
Revised Concept Report – if the revision involves splitting an original project into additional project phases, the revised report must clearly note the new project limits for each phase along with the related cost estimates for each phase.
Project conforms to RTP/TIP/STIP (model yr/open to traffic, # of lanes, termini, cost estimates).
Traffic Volumes reflect current and design year estimates and cover side roads adequately.
Geometric Design Policy has been adequately determined – functional classification, design speed, design vehicle, min radius, max grades, max SE rate, access control, clear zone, median usage.
See GDOT DPM Chapters 3, 4, and 5: http://wwwb.dot.ga.gov/dpm/desmanual/toc.html.
Typical Sections – see GDOT DPM Chapter 6: http://wwwb.dot.ga.gov/dpm/desmanual/ch06/ch06.html.
Capacity Analysis demonstrates acceptable Level of Service (LOS) for Functional Classification.
Lane configuration (number of lanes, turn lanes) is consistent with the Capacity Analysis.
Provisions for u-turns have been assessed at appropriate locations along the roadway.
Accident/Crash History - the concept addresses critical locations along the project?
Avoidance of environmental resources has been adequately considered.
State Waters and Stream Buffers have been identified by the ecologist and noted on plans.
FEMA Flood Plains, Biota Impaired Streams, Fish Passage has been assessed.
Avoidance of major utilities has been adequately considered.
Considerations for pedestrian and bicycle access has been adequately addressed. Constructability has been assessed (staging, detours, road closures, access, major utilities, etc.). Structural elements have been adequately considered (bridge, culvert, retaining wall, noise wall). Vertical clearances are addressed (see GDOT Bridge and Structures Design Policy Manual).
http://www.dot.state.ga.us/doingbusiness/PoliciesManuals/roads/Documents/DesignPolicies/GDOT%20Bridge%20and%20Structures%20Policy%20Manual.pdf.
FAA coordination has occurred (if project is within 2 miles of an airport or aviation facility).
Design Exceptions and Variances are addressed: http://wwwb.dot.ga.gov/dpm/desmanual/ch02/ch02.2.html.
Coordination with stakeholders has occurred (FHWA, local governments, civic groups, utility companies, railroad companies, other federal and state agencies, etc…).
R/W & Esmt limits are reasonable - GDOT DPM. http://wwwb.dot.ga.gov/dpm/desmanual/ch06/ch06.10.html.
V.E. study recommendations have been implemented if applicable.
Feasible alternative alignments have been adequately considered and noted.
Cost estimates have been reviewed and are satisfactory (ROW, UTL, and CST).

Action:

Lead Design Engineer will incorporate revisions resulting from the review into the Concept Report and Layout; and/or conduct additional studies to support decisions or resolve questions, and follow-up with Assistant Office Head for closure.
Document and file, in QC/QA folder, a copy of the review notes and any actions taken by the review panel.

Project: _____. AOH: _____. Date: _____.

Component of Quality Assurance:

3. Geometric Review

Review Panel: Assistant Office Head, DGM/Senior Design Engineer, Lead Design Engineer

Review Schedule: Hold meeting three (3) weeks prior to scheduled completion of the preliminary alignments and other roadway geometrics.

Proposed horizontal and vertical alignments comply with design speed and AASHTO criteria for geometric design (stopping, decision, and intersection sight distance).
Maximum super-elevation rate is appropriate for the design speed and functional classification of the mainline and side-roads: http://wwwb.dot.ga.gov/dpm/desmanual/ch04/ch04.5.1.html .
Vertical and horizontal clearances are in compliance; with respect to bridge structures, drainage structures, and other rigid fixed structures.
Coordination with FAA has occurred if project is within 2 miles of an airport or aviation facility.
Typical sections, cross sections, and construction limits are consistent.
The effect of geometric design on driveway access along the roadway has been adequately assessed.
The effect of the median on access (u-turns) for large design vehicles (SU, BUS, and WB-62) along the roadway has been adequately assessed and addressed where appropriate.
Preliminary Soil Survey findings (if available) have been considered.
The effect of geometric design on environmental resources has been adequately addressed.
The effect of geometric design on major utilities has been adequately addressed.
The effect of geometric design with respect to constructability has been adequately addressed (earthwork staging, maintenance of traffic, bridge construction, utilities, etc…).
Review Project Design Data Book and randomly check that data is being documented properly.

Action:

Lead Design Engineer will incorporate revisions resulting from the review into the Preliminary Plans; and/or conduct additional studies to support decisions or resolve questions, and follow-up with Assistant Office Head for closure.
Document and file, in QC/QA folder, a copy of the review notes and any actions taken by the review panel.

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Component of Quality Assurance:

4. Preliminary Plans Review

Review Panel: Assistant Office Head, DGM/Senior Design Engineer, Lead Design Engineer
Review Schedule: Preferably six (6) weeks (NLT three (3) weeks) prior to requesting PFPR**.**

Preliminary plans are consistent with approved concept report and/or revised concept report.
Project conforms to RTP/TIP/STIP (model yr/open to traffic, # of lanes, termini, cost estimates).
Horizontal and vertical curves and SE rates meet design speed criteria.
Typical Sections accurately reflect the "TYPICAL" roadway design features along the project.
Soil Survey/Pavement Evaluation/UST recommendations have been adequately addressed.
At-grade intersection design meets GDOT guidelines and AASHTO Green Book, and is appropriate for the applicable design vehicle.
ADA requirements are appropriately addressed within the project design.
Construction limits are consistent with the typical sections, horizontal and vertical alignments, and specific roadway design features along the project.
Survey/mapping/topo information is "current" and accurately shown on the plans.
QA Review of State Waters and Stream Buffer Variances has been received from the ecologist.
FEMA Flood Plains, Biota Impaired Streams, Fish Passage has been addressed if applicable.
Drainage design is supported by appropriate studies/calculations/software applications.
The effects of backwater (headwater) and tailwater have been properly addressed.
Environmental resources are identified and Environmental Commitments addressed on the plans.
Access is addressed for each parcel along the roadway, including provisions for u-turns where appropriate.
Existing utilities are adequately shown on the plans (reimbursable/non-reimb/prior-rights noted).
Preliminary Bridge Plans are consistent with the roadway geometric design.
Railroad coordination has occurred including RR approval of the Preliminary Bridge Plans.
Constructability Review has been held with District Construction and Utility staff.
Preliminary Staging Plans and Detours are adequately designed.
Preliminary ESPCP is adequately designed and complies with NPDES Permit No. GAR100002.
Required R/W and Easements are adequate and reasonable for the functional classification and access control along the roadway. http://wwwb.dot.ga.gov/dpm/desmanual/ch06/ch06.10.html.
Plans are clean, legible, proper scale, weight, north arrow, match lines, etc… (EDG & PPG).
Cost estimates have been reviewed and are satisfactory (ROW, UTL, and CST).

Action:

Lead Design Engineer will incorporate revisions resulting from the review into the Preliminary Plans; and/or conduct additional studies to support decisions or resolve questions, and follow-up with Assistant Office Head for closure.
Document and file, in QC/QA folder, a copy of the review notes and any actions taken by the review panel.

QA Stamp Required on Preliminary Plans:

Assistant Office Head →
DGM/Sen.Des.Engr. or Lead Des. Engr. →
Design Engineer →
DGM/Sen.Des.Engr. or Lead Des. Engr. →

QA REVIEW
Checked……Date……....
Back-checked……Date……....
Corrected……..Date……
Verified……Date……

Project: _____. AOH: _____. Date: _____.

Component of Quality Assurance:

5. Right of Way Plans Review

Review Panel: Assistant Office Head, DGM/Senior Design Engineer, Lead Design Engineer

Review Schedule: Hold meeting two (2) weeks prior to submitting plans to the Office of Right of Way.

The Location & Design Report is prepared and approved.

Survey/mapping/topo information is "current" and accurately shown on the plans.

Required R/W and Easements are adequate and reasonable for the functional classification and access control along the roadway. See GDOT Design Policy Manual, Chapter 6.10, Right-Of-Way Controls: http://wwwb.dot.ga.gov/dpm/desmanual/ch06/ch06.10.html.

Access to remainders of split parcels (potential land-locked) has been assessed adequately. It is appropriate to design access breaks to avoid costly damages to the remainders of split parcels provided there is a low risk of negative effect on the capacity and operation of the route in the design year.

Access (u-turns) for appropriate design vehicles (Passenger Car, SU, BUS, and WB-62) along the roadway has been adequately assessed and addressed where appropriate and practical.

Potential utility replacement easements have been assessed and addressed in the plans if applicable.

Environmental Commitments (Green Sheet) are addressed in the plans.

R/W Plans are developed in accordance with guidelines "Checklist for R/W Plans" located on the R.O.A.D.S. website. http://www.dot.ga.gov/doingbusiness/policiesmanuals/roads/pages/default.aspx.

The "R/W Cost Estimate" reflects the current R/W Plans.

Action:

Lead Design Engineer will incorporate revisions resulting from the review into the R/W Plans; and/or conduct additional studies to support decisions or resolve questions, and follow-up with Assistant Office Head for closure.

Document and file, in QC/QA folder, a copy of the review notes and any actions taken by the review panel.

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Component of Quality Assurance:

6. FFPR Plans Review

Review Panel: Assistant Office Head, DGM/Senior Design Engineer, Lead Design Engineer
Review Schedule: Preferably four (4) weeks (NLT two (2) weeks) before requesting FFPR.

All applicable PFPR comments have been adequately addressed within the Final Plans.
Final plans are consistent with approved concept report and/or revised concept report.
Project conforms to RTP/TIP/STIP (model yr/open to traffic, # of lanes, termini, cost estimates).
Survey/mapping/topo information is "current" (reflects new developments, etc…).
Cover Sheet contains all required information as defined in the Plan Presentation Guide (PPG).
Typical Sections accurately represent the project limits, approved pavement design, and contain all required information as defined in the PPG.
Summary-of-Quantities have been estimated by subordinate engineer(s) and verified by the Lead Engineer and the Senior Engineer. Procedure for summarizing pavement quantities and earthwork quantities is accurate. Utility pay-items are properly summarized if applicable.
Detailed Estimate has been cross-checked with the Summary-of-Quantities and is accurate.
Bridge Plans are consistent with the roadway geometric design.
Coordination with FAA has occurred if project is within 2 miles of an airport or aviation facility.
Signing & Marking & Signal Plans are consistent with the final roadway plans.
ADA requirements are appropriately addressed within the project design.
All utility relocations/notes are adequately shown on the plans.
Staging Plans and Detours are adequately designed.
ADA requirements are appropriately addressed through Temporary Traffic Control Zones.
All State Waters and Stream Buffers are delineated on the plans according to the ecologist.
Environmental Commitments (Green Sheet) are addressed in the plans.
ESPCP is adequately designed and complies with the NPDES Permit No. GAR100002.
Required R/W and Easements are adequate and reasonable for the functional classification and access control along the roadway. http://wwwb.dot.ga.gov/dpm/desmanual/ch06/ch06.10.html.
Recommendations from supporting offices have been incorporated into the plans (i.e. Special Provisions, Railroad and/or Utility Agreements, R/W options, etc…)
Final Plans reflect Design Exceptions and/or Design Variances if applicable.
Cost estimates have been reviewed and are accurate (ROW, UTL, and CST).

Action:

Lead Design Engineer will incorporate revisions resulting from the review into the Final Plans; and/or conduct additional studies to support decisions or resolve questions, and follow-up with Assistant Office Head for closure.
Document and file, in QC/QA folder, a copy of the review notes and any actions taken by the review panel.

QA Stamp Required on Plans:

Assistant Office Head → **Checked…… Date……....**
DGM/Sen.Des. Engr. or Lead Des. Engr. → **Back-checked……..….Date……....**
Design Engineer → **Corrected……..Date……**
DGM/Sen.Des. Engr. or Lead Des. Engr. → **Verified……Date……**

QA REVIEW

Project: _____ AOH: _____ Date: _____

Component of Quality Assurance:

7. Final Plans Submission Review

Review Panel: Assistant Office Head, DGM/Senior Design Engineer, Lead Design Engineer

Review Schedule: Hold meeting two (2) weeks prior to submitting plans to the Office of Contracts Administration.

All applicable FFPR comments have been adequately addressed within the Final Plans.
Review and verify the "Designer's Checklist for Plans Submittal to Contracts Administration" (completed by the Senior Engineer): http://wwwb.dot.state.ga.us/dot/construction/contractsadm/.
Final Bridge Plans are complete and are consistent with the final roadway plans.
Signing & Marking & Signal Plans are complete and consistent with the final roadway plans.
ESPCP is consistent with the latest GDOT "NPDES General Permit Guidelines" published on the R.O.A.D.S. website:
http://www.dot.ga.gov/doingbusiness/PoliciesManuals/roads/Pages/DesignPolicies.aspx
Notice of Intent (NOI) is accurate and complete: http://wwwb.dot.state.ga.us/dot/construction/contractsadm/.
Environmental Commitments (Green Sheet) are addressed in the Final Plans.
Designer's Cost Estimate reflects latest unit costs for pay-items, and Lump Sum items reflect the respective scope of work - coordination has occurred with Engineering Services and District Construction staff if necessary.
Project conforms to RTP/TIP/STIP (model yr/open to traffic, # of lanes, termini, cost estimates).

Action:

Lead Design Engineer will incorporate revisions resulting from the review into the Final Plans Package if needed; and/or conduct additional studies to support decisions or resolve questions, and follow-up with Assistant Office Head for closure.
Document and file, in QC/QA folder, a copy of the review notes and any actions taken by the review panel.

Project: _____ AOH: _____ Date: _____

QC/QA RECORD			
Project Number:			County:
P.I. NO.			Project Description:
Lead Engineer:		Design Group Manager:	Assistant Office Head:
Date	Reviewer	Item(s) Reviewed	Comment

Date	Reviewer	Item(s) Reviewed	Comment

Date	Reviewer	Item(s) Reviewed	Comment

Date	Reviewer	Item(s) Reviewed	Comment

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

PROJECT **DATE**

FROM *Office Head*

TO Glenn Bowman, P.E., State Environmental Administrator
Attn: _____, NEPA Coordinator

SUBJECT QA Review of State Waters and Stream Buffer Delineations

Attached are preliminary layouts for the project listed above. The Design Group Manager (DGM) has identified all "blue-line streams" identified on USGS Quad Maps, and drainage features (highlighted in yellow) identified through mapping and field surveys. Also identified on the layouts are streams and buffers previously identified by the ecologist.

This is to request that the ecologist complete a comprehensive QA review of the streams and drainage features marked on the layouts to ensure that all state waters and stream buffers have been properly identified on the plans.

We are requesting that the ecologist identify (with red mark on the provided layouts) any additional state waters and stream buffers and return to the DGM by the date below. We also request that the ecologist notify the DGM prior to the review and/or field visit so a joint review of the layouts and project limits can be conducted. After the layouts are returned to the DGM, the layouts will be scanned (in color) and placed on Pccommon within a PI Number folder and the ecologist will be notified for the record.

The current **MGMT R/W DATE** is: _____.

The current **MGMT LET DATE** is: _____.

Please provide this QA Review by date: _____.

If you have any questions, please contact the Design Group Manager, _____, at (404) _____.

Attachments

cc: Gail D'Avino
Rich Williams
Lisa Westberry

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: [*PROJECT*] **DATE:** [*DATE*]

FROM: [*Office Head*]

TO: [*Name*], District Engineer
Attn: [*Name*], District Construction Engineer

SUBJECT: **Constructability Review Meeting**

In accordance with the Plan Development Process (PDP), this office is requesting a Constructability Review for the above-mentioned project, to be held at the [*City*] Area Office on [*date, time*].

The purpose of this informal review meeting is to focus on 11 key areas of the project that can cause schedule delays and costly revisions later in the project development or during construction:

1. Site Conditions/Investigation
2. Earthwork
3. Base & Pavement
4. Drainage
5. Structures
6. Traffic Control Plan
7. Maintenance Considerations
8. Special Provisions
9. Construction Staging
10. Right of Way
11. Schedule

The Constructability Review Team will conduct an office review of the plans & special provisions while covering each of the topic areas listed above. The Team will then conduct an extensive site investigation looking specifically at site conditions compared to the plans and design, utilities, project access for the contractor's equipment and operations, permit and environmental concerns, etc. The team will consist of the Project Manager, Design Group Manager/Senior Design Engineer, Lead Design Engineer, District Construction Engineer, District Utility Engineer, Area Engineer, and FHWA Area Transportation Engineer (if applicable). If you cannot attend, please send an experienced staff member to represent you.

Attached for your preparation for the Constructability Review is a set a Construction Plans, Special Provisions and the Constructability Review Checklist. If you have any questions or need additional information, please contact [*Design Group Manager/Senior Engineer*] at [*phone number*].

Attachments

cc: Area Engineer
District Utilities Engineer
FHWA (if applicable)
Project Manager

Design Calculation

Review and Approval Certification

Project #: _____ **PI #:** _____ **County** _____
Description: _____

TITLE OF CALCULATIONS _____

Calculations prepared by: (Originator)	Signature _____	DATE _____
	Printed Name and Title _____	
Design criteria and procedures checked by: (Lead Design Engineer or Senior Design Engineer)	Signature _____	DATE _____
	Printed Name and Title _____	
Computations checked by: (Lead Design Engineer or Senior Design Engineer)	Signature _____	DATE _____
	Printed Name and Title _____	
Calculation back-checked And/or corrected by: (Originator)	Signature _____	DATE _____
	Printed Name and Title _____	
Calculation approved by: (Lead Design Engineer or Senior Design Engineer)	Signature _____	DATE _____
	Printed Name and Title _____	

Notes: